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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/831,855	08/23/2001	Pratima Pai	851663.426US	9840

7590 07/26/2005

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EXAMINER	
CORRIELUS, JEAN B	
ART UNIT	**PAPER NUMBER**
2637	

DATE MAILED: 07/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/831,855	PAI ET AL.	
	Examiner	Art Unit	
	Jean B. Corrielus	2637	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 April 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The previous objection to the specification is withdrawn in view of the applicant's comment, filed on 4/20/05. However, the disclosure is objected to because of the following informalities: page 9, line 9, "engine 3" should be "engine 4".

Appropriate correction is required.

2. The allowability of claims 1-15 is withdrawn in view of the applicant's admitted prior art figs. 1-4

Drawings

3. The drawings were received on 4/20/05. These drawings are acceptable.

Claim Objections

4. Claims 6-15 are objected to because of the following informalities: claim 6, line 4, "may be" should be replaced by "is". Claim 7, line 1,"shouldn't "first" be deleted"? claim 10, line 4, "may be" should be replaced by "is"; line 8, "said data frame" should be "said data frames"; line before the last, "after strategy, "is" should be inserted; and "the node" should be replaced by "a node". Claim 11, line 4, "may be" should be replaced by "is"; line 8, "said data frame" should be "said data frames"; line before the last, "after strategy, "is" should be inserted; and "the node" should be replaced by "a node". The same comment applies to claims 12-15, respectively. Note that claims 7-9 are likewise

objected to because they depend on an objected base claim. Appropriate correction is required.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-15 are rejected under 35 U.S.C. 102(b) as being anticipated by applicant's admitted prior art (See drawings figs.1-4, filed on 4/20/05).

As per claim 1, applicant's admitted prior art fig. 3 teaches a method of coding digital data for transmission according to a trellis coding system having a predetermined number of N states and a predetermined number of (M) state transitions from each state, wherein the data is arranged in a series of frames, a state is associated with each frame to determine a coding strategy for the frame, and a look-ahead depth (D) representing a number of data frames is selected, comprising: assigning an initial state for a first frame of the series of data frames, and assigning states for the subsequent data frames in the series of data frames up to the look-ahead depth according to a predetermined valid trellis path see element 7; sequentially fetching subsequent data frames in the series and determining respective states therefor based on a path metric for state transitions computed over the number of frames represented by the look-ahead depth see elements 4-6 and coding the data frames for transmission according to the coding strategies corresponding to the states assigned or determined for the frames,

wherein the series of data frames are coded for a shaped spectrum upon transmission thereof see element 2.

As per claim 2, applicant admitted prior art further teaches that fetched data frames are buffered over said look-ahead depth from a current frame Xi to a look-ahead depth frame Xi+D where i represents the data interval. See element 1

As per claim 3, applicant admitted prior art further teaches the node information for nodes representing possible state transitions at the look-ahead depth are stored in a node memory in an ordered array, and wherein the coding strategy for the current data frame Xi is determined on the basis of a node selected at the look-ahead depth according to said path metric see element 3.

As per claim 4, applicant admitted prior art further teaches the node information in said node memory is replaced for each new data frame in the series. See element 6.

As per claim 5, applicant admitted prior art further teaches the coding strategy for the current data frame Xi is determined according to a state transition from the state associated with said current frame that is determined by a comparison of the position of the node selected at the look-ahead depth with at least one predetermined threshold. See element 5

As per claim 6, applicant admitted prior art further teaches a data encoder fig. 3 for generating spectrally-shaped coded data according to a trellis coding system, wherein the data are arranged in a series of data frames from a data source and a trellis state is associated with each data frame such that a coding scheme for each frame may be determined on the basis of transitions of states for frames over a selected look-

ahead depth (D) comprising: a buffer memory coupled to the data source for buffering data frames in the series of data frames by the selected look-ahead depth (D); a metric computation and trellis extension engine 4 coupled to sequentially receive said data frames from the data source and determine node information in a plurality of nodes for each said frame representing possible states, state transitions from a preceding frame, and path metrics for the state transitions; a current state storage 6 coupled to the metric computation and trellis extension engine for storing the state of a current frame in the series of data frames; a node memory 3 coupled to the metric computation 4 and trellis extension engine for storing said node information for nodes of a frame succeeding the current frames by the look- ahead depth; a coding scheme memory for storing a correlation between state transitions and respective coding schemes; and a processing circuit 2 coupled to the coding scheme memory and to the metric computation and trellis extension engine for applying a selected coding scheme to a data frame to generate spectrally-shaped coded data, said metric computation and trellis extension engine 4 is configured to determine the selected coding scheme for the current frame according to the state stored in the current state storage and a node for the frame succeeding the current frame by the look-ahead depth that is selected on the basis of the path metric for the node, the metric computation and trellis extension engine 4 assigning an initial state for a first frame of the series of data frames, and assigning states for the subsequent data frames in the series of data frames up to the look-ahead depth according to a predetermined valid trellis path.

As per claim 7, applicant admitted prior art further teaches, for the first frame within the look-ahead depth of the series of data frames, states and state transitions are assigned according to the predetermined valid trellis path see fig. 2.

As per claim 8, applicant admitted prior art further teaches for each said data frame received by the metric computation and trellis extension engine 4 the node information in the node memory 3 is replaced with new node information representing the received data frame and the possible state transitions from the preceding data frame.

As per claim 9, applicant admitted prior art further teaches the node information for the nodes is stored in linear array in said node memory, and wherein the coding scheme for the current frame is determined according to the position of the selected node within the node memory linear array. See fig. 1 and 2.

As per claims 10 and 11, applicant admitted prior art further teaches a data encoder fig. 3 for generating spectrally-shaped coded data according to a trellis coding system wherein the data are arranged in a series of data frames from a data source and a trellis state is associated with each data frame such that a coding scheme for each data frame may be determined on the basis of transitions of states for frames over a selected look-ahead depth, the data encoder comprising: a metric computation and trellis engine 4 configured to sequentially receive the data frames from the data source and to determine node information in a plurality of nodes for each said data frame representing possible states, state transitions from a preceding data frame, and path metrics for the state transitions, the metric computation and trellis engine configured to

assign an initial state for a first frame of the series of data frames, and to assign states for subsequent data frames in the series of data frames up to the look-ahead depth according to a predetermined valid trellis path, and to sequentially fetch subsequent data frames in this series of data frames and to determine respective states therefor based on a path metric for state transitions computed over the number of frames represented by the look-ahead depth; and a processing circuit 2 coupled to the metric computation and trellis engine and configured to apply a selected coding strategy to the data frames to generate spectrally-shaped coded data for transmission, the coding strategy selected on the basis of the node selected at the look-ahead depth according to the path metric.

As per claims 12 and 13, applicant admitted prior art further teaches a coding scheme memory 6 coupled to the metric computation and trellis engine 4 and configured to store state transition information correlating state transitions to respective coding strategies.

As per claims 14 and 15, applicant admitted prior art further teaches a node memory coupled 3 to the metric computation and trellis engine and configured to store in an ordered array node information representing possible state transitions for nodes of a data frame succeeding the current frame by the look-ahead depth.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jean B. Corrielus whose telephone number is 571-272-3020. The examiner can normally be reached on Maxi-Flex.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on 571-272-2988. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jean B Corrielus
Primary Examiner
Art Unit 2637 1/22/05